



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,381	09/30/2003	Julie Y. Qian	SAM0017/US	3226

33072 7590 05/23/2005

KAGAN BINDER, PLLC
SUITE 200, MAPLE ISLAND BUILDING
221 MAIN STREET NORTH
STILLWATER, MN 55082

EXAMINER

RODEE, CHRISTOPHER D

ART UNIT	PAPER NUMBER
----------	--------------

1756

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/676,381

Applicant(s)

QIAN ET AL.

Examiner

Christopher RoDee

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/5/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 10-15, 17, 18, and 20 rejected under 35 U.S.C. 102(b) as being anticipated by deGraft-Johnson *et al.* in US Patent 5,232,811.

deGraft-Johnson discloses a liquid toner having a carrier liquid with a K-B value of less than 30 (col. 3, l. 8-20), a dyed latex containing a dispersing agent, a fixative agent, and a coloring agent (col. 3, l. 42-44), and a charge director (i.e., a charge control agent) (col. 4, l. 57+). The dyed latex contains a dispersing agent, which is an amphipathic graft copolymer, that is irreversibly bound to the fixative agent of the latex. The bound combination of the fixative agent and the dispersing agent forms the binder resin of the latex. This latex constitutes the toner particles of the liquid toner (col. 4, l. 13-32). The charge control agent for the toner has, as one component, a salt-free copolymer of lauryl methacrylate and dimethylamino-ethyl methacrylate (col. 5, l. 7-30) Another component is a salicylic acid salt. This charge control agent appears to be a base because of the amino groups (see spec. p. 9, l. 23-24). See Example I. Because the charge control agent has the amine groups specified in the instant specification and claims as effective for a negative charge control agent it appears that the toner of deGraft-Johnson is inherently a negative liquid toner. The colorant contains the dye and a pigment (col. 4, l. 33-51). The large amount of dodecyl (lauryl) methacrylate in the exemplified

Art Unit: 1756

toner would appear to give a binder resin with a Tg below 30 ° (Tg of dodceyl methacrylate is 208 K).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6-10, 14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in US Patent 3,753,760 in view of Gibson in US Patent 4,891,286 or Almog in US Patent 5,792,584.

Kosel discloses a liquid electrophotographic developer comprising a solvent having a KB value of 26 to 35 (col. 7, l. 57 – col. 9, Table), a binder resin that is a graft amphipathic copolymer polymer (col. 9, l. 10 – col. 10, l. 57; col. 13, l. 18-47), and a colorant, such as a pigment or dye (col. 15, l. 41 – col. 18, l. 20). A charge director is also included in the liquid developer (col. 18, l. 43 – col. 20, l. 43), such as lechtin (col. 20, l. 3). ISOPAR carrier liquids are used in the reference examples.

Kosel does not appear to disclose the addition of an acid or base to the toner to form a negatively charged liquid developer but Gibson teaches that charge homogeneity and mobility is improved when a liquid insoluble monomeric organic acid is added to the developer (Abstract). Useful acids include benzoic acid, succinic acid, toluene sulfonic acid, phenylphosphonic acid, salicylic acid, and nitrobenzoic acid (Abstract), as well as octanoic acid and hexanoic acid (col. 5, l. 24 – col. 6, l. 26). The other components of the liquid developer include a carrier liquid,

Art Unit: 1756

such as an ISOPAR series liquid (col. 4, l. 30-46), a pigment (col. 4, l. 47-68), a binder polymer (col. 5, l. 1-14), and negative charge directors (col. 5, l. 16-23).

Almog discloses a liquid developer having acids, in this case soluble acids, that can be added to the liquid carrier to stabilize the charge effect of charge directors for negatively charged toner systems (Abstract; col. 5, l. 21-29; col. 3, l. 48-62; Figs. 1-4; Examples). Long alkyl chain acids are specifically disclosed, such as stearic and lauric acid (Abstract; Examples).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an insoluble monomeric organic acid to the liquid developer of Kosel because Gibson teaches that these acids give improved charge homogeneity and mobility when forming negatively charged liquid developers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a soluble organic acid to the liquid toner of Kossel because Almog teaches that these acids are effective to stabilize the charge effect of charge directors for negatively charged toner systems. The artisan would also choose specific monomers for the amphipathic polymer in Kosel in order to optimize the ficing characteristics of the toner.

Claims 1-5, 10-13, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in US Patent 3,753760 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

Kosel was discussed above and, as noted above, the reference does not disclose the addition of the acids or base of the instant claims.

However, Diamond and Weiss teach the conventional materials for liquid toners (i.e., dispersant, resin, charge control agent, colorant) and useful particle sizes for the liquid toner. Liquid developers can be of either a positive or negative charge dependent on the charge

Art Unit: 1756

director and other materials added to the liquid composition. The text teaches that charging in liquid hydrocarbons (e.g., ISOPARs) occurs by formation of micelles at the particle surface by action of the charge directors. For negative charging systems, this process is enhanced by addition of micelle soluble bases, such as by aliphatic amines (tributylamine, hexylamine, dodecylamine, etc.) as well as soluble hydroxides (e.g., t-butylammonium hydroxide) and aminoalcohols. Useful charge directors include lechtin and glyceride salts (p. 244).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a negative charge director and an aliphatic amine, a soluble hydroxide, or an aminoalcohol to a liquid developer to produce and enhance the negative charge because Kosel desires a charged liquid toner in order to develop an electrostatic latent image and there are only two possible charging effects, positive and negative. The artisan would choose one of these two options and use known materials to enhance the charging characteristics of the toner, such as a charge director and aliphatic amine, a soluble hydroxide, or an aminoalcohol, to optimize the micelle formation of the toner and ensure stable development of the image.

Claims 1-5, 10-13, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian *et al.* in US Patent Application Publication 2004/0091807 or Qian *et al.* in US Patent Application Publication 2004/0091808 or Qian *et al.* in US Patent Application Publication 2004/0091809 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

Qian '807 discloses a liquid toner containing a liquid carrier and amphipatic copolymeric binder particles (Abstract). The reference teaches that the polymer particles of the liquid toner are amphipatic graft copolymer particles having an S and D portion (¶ [0089] – [0091], [0094],

Art Unit: 1756

[0097]). The copolymer has a Tg of from 15 to 55 ° C (¶ [0066]). The toner contains a visual enhancement agent, a charge control agent, such as lechtin (¶ [0108] - [0113]). The liquid carrier has a KB value of 30 ml or less (¶ [0054]).

Qian '808 discloses a liquid toner containing a liquid carrier and amphipatic copolymeric binder particles (Abstract). The reference teaches that the polymer particles of the liquid toner are amphipatic graft copolymer particles having an S and D portion (¶ [0028], [0088]). The copolymer has a Tg as specified in Tables 2 and 3. The toner contains a visual enhancement agent, a charge control agent, such as lechtin (¶ [0107] - [0112]). The liquid carrier has a KB value of 30 ml or less (¶ [0065]).

Qian '809 discloses a liquid toner containing a liquid carrier and copolymeric binder particles (Abstract). The reference teaches that the polymer particles of the liquid toner are amphipatic graft copolymer particles having an S and D portion (¶ [0036] – [0039], [0051], [0052], [0082]). The copolymer has a Tg of from 25 to 200 ° C (¶ [0057]). The toner contains a visual enhancement agent, a charge control agent, such as lechtin (¶ [0095]). The liquid carrier has a KB value of 30 ml or less (¶ [0046]).

Each Qian publication does not disclose the addition of the acids or base of the instant claims, but Diamond and Weiss teach the conventional materials for liquid toners (i.e., dispersant, resin, charge control agent, colorant) and useful particle sizes for the liquid toner. Liquid developers can be of either a positive or negative charge dependent on the charge director and other materials added to the liquid composition. The text teaches that charging in liquid hydrocarbons (e.g., ISOPARs) occurs by formation of micelles at the particle surface by action of the charge directors. For negative charging systems, this process is enhanced by addition of micelle soluble bases, such as by aliphatic amines (tributylamine, hexylamine,

Art Unit: 1756

dodecylamine, etc.) as well as soluble hydroxides (e.g., t-butylammonium hydroxide) and aminoalcohols. Useful charge directors include lechtin and glyceride salts (p. 244).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a negative charge director and an aliphatic amine, a soluble hydroxide, or an aminoalcohol to any of Qian's liquid developers, discussed above, to produce and enhance the negative charge because Qian discloses that the charged liquid toner can be negatively charged (e.g., '809: ¶ [0096]) and the artisan would use known materials to enhance the negative charging characteristics of the toner, such as a charge director and aliphatic amine, a soluble hydroxide, or an aminoalcohol, to optimize the micelle formation of the toner and ensure stable development of the image.

Claims 1-5, 10-13, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morrison *et al* in US Patent Application Publication 2003/0134940 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

Morrison discloses a liquid ink for electrophotographic development containing a carrier liquid with a KB value of less than 30, a graft copolymer comprising a stabilizer covalently bound to thermoplastic core particles, a positive and negative charge director, and a colorant (Abstract; ¶ [0016] – [0020], [0024]-[0026], [0049], [0059]).

Morrison does not disclose the addition of the acids or base of the instant claims, but Diamond and Weiss teach the conventional materials for liquid toners (i.e., dispersant, resin, charge control agent, colorant) and useful particle sizes for the liquid toner. Liquid developers can be of either a positive or negative charge dependent on the charge director and other materials added to the liquid composition. The text teaches that charging in liquid

Art Unit: 1756

hydrocarbons (e.g., ISOPARs) occurs by formation of micelles at the particle surface by action of the charge directors. For negative charging systems, this process is enhanced by addition of micelle soluble bases, such as by aliphatic amines (tributylamine, hexylamine, dodecylamine, etc.) as well as soluble hydroxides (e.g., t-butylammonium hydroxide) and aminoalcohols. Useful charge directors include lechtin and glyceride salts (p. 244).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a negative charge director and an aliphatic amine, a soluble hydroxide, or an aminoalcohol to Morrison's liquid developer, discussed above, to produce and enhance the negative charge because Morrison discloses that the charged liquid toner can be have negative charge directors and the artisan would use known materials to enhance the negative charging characteristics of the toner, such as a charge director and aliphatic amine, a soluble hydroxide, or an aminoalcohol, to optimize the micelle formation of the toner and ensure stable development of the image. The artisan would have found it obvious to optimize the Tg of the polymer particles in order to form an image that will fix by heating (§ [0068]).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1756

Claims 1-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of copending Application No. 10/676371 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257. The copending claims specify a positively liquid developer having a liquid carrier having a Kauri Butanol number less than about 30 mL; a plurality of positively charged toner particles dispersed in the liquid carrier, wherein the toner particles comprise a polymeric binder comprising at least one amphipathic graft copolymer comprising one or more S material portions and one or more D material portions; and a charge control adjuvant that is an acid or a base. The claims do not specify a negatively charged toner as claimed, but the supporting text shows that the charge on the toner is effected by the charge director and other components added to the liquid composition. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the toner of the copending claims from positively charged to negatively charged in order to develop the reverse image on a photoreceptor. It is apparent from the art that such a modification is well within the level of skill in the art. This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1756

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



CHRISTOPHER RODEE
PRIMARY EXAMINER

cdr
12 May 2005